

Application Number: 10/531,324  
Amendment Dated: November 9, 2009  
Reply to Office Action of: May 11, 2009

### **AMENDMENT TO THE CLAIMS**

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently amended) A compound, represented by the general formula



~~and or a physiologically acceptable salt, including isomers and stereoisomers or an isomer or stereoisomer,~~ wherein:

A ~~comprises is~~ a radical selected from one of the formulae Y, YR<sup>1</sup>, R<sup>1</sup>Y, R<sup>1</sup>YR<sup>4</sup>, R<sup>1</sup>OY, YOR<sup>1</sup>, R<sup>1</sup>YOR<sup>2</sup> or R<sup>1</sup>OYOR<sup>2</sup>;

W ~~comprises is~~ a radical of the formulae R<sup>3</sup>Q or a C4 to C7 non-aromatic heterocycle containing a nitrogen heteroatom wherein said heterocycle ~~comprises consists of~~ at least one heteroatom independently selected from nitrogen, oxygen, sulfur and combinations thereof, and wherein said heterocycle can be substituted with one or more substituent groups;

Y ~~comprises is~~ a carbocyclic ring, a carbocyclic ring ~~comprising consisting of~~ at least one substituent group, a fused bicyclic ring system, a fused bicyclic ring system ~~comprising consisting of~~ at least one substituent group, a bridged bicyclic ring system, a bridged bicyclic ring system ~~comprising consisting of~~ at least one substituent group, a bridged tricyclic ring system, a bridged tricyclic ring system ~~comprising consisting of~~ at least one substituent group, a heterocyclic ring, a heterocyclic ring ~~comprising at least one substituent group~~, an aromatic system or an aromatic system ~~comprising at least one substituent group~~, a heteroaromatic system or a heteroaromatic system ~~comprising at least one substituent group~~;

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X ~~comprises is~~ a valency bond, a methylene group ( $-\text{CH}_2-$ ) or a heteroatom selected from nitrogen, oxygen, sulfur;

R<sup>1</sup> ~~comprises is~~ a C5 to C18 alkylidene group or C5 to C18 alkyl group, any possible member selected from a substituted or unsubstituted carbocyclic ring having about 3 to about 7 ring members, ~~a heterocyclic ring having about 4 to about 7 ring members~~, ~~an aromatic ring having about 5 to about 7 ring members~~, ~~a heteroaromatic ring having about 5 to about 7 ring members~~, or any above group comprising a substituent group on at least one available ring atom, an about C3 to about C20 saturated ~~or unsaturated~~, straight or branched, aliphatic hydrocarbon chain, an about C3 to about C20 unsaturated straight or branched, aliphatic hydrocarbon chain having 4 or fewer double bonds, an about C3 to about C20 saturated or unsaturated, straight or branched, aliphatic hydrocarbon chain ~~comprising~~ consisting of one or more independently chosen heteroatoms, an about C3 to about C20 saturated or unsaturated, straight or branched, aliphatic hydrocarbon chain ~~comprising~~ consisting of at least one independently chosen possible member selected from a carbocyclic ring having about 4 to about 7 ring members, ~~a heterocyclic ring having about 4 to about 7 ring members~~, ~~an aromatic ring having about 5 to about 7 ring members~~, ~~a heteroaromatic ring having about 5 to about 7 ring members~~; or any above member ~~comprising~~ consisting of a substituent group on at least one available ring atom, or any above about C3 to about C20 hydrocarbon chain having at least one independently chosen substituent group;

R<sup>2</sup> ~~comprises is~~ any possible member selected from a substituted or unsubstituted carbocyclic ring having about 3 to about 7 ring members, a ~~heterocyclic ring having about 4 to about 7 ring members~~, ~~an aromatic ring having about 5 to about 7 ring members~~, ~~a heteroaromatic ring having about 5 to about 7 ring members~~; any above group comprising a substituent group on at least one available ring atom, an about C2 to about C5 saturated ~~or unsaturated~~, straight or branched, aliphatic hydrocarbon chain, an about C3 to about C20

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unsaturated straight or branched, aliphatic hydrocarbon chain with 4 or fewer double bonds, an about C2 to about C5 saturated or unsaturated, straight or branched, aliphatic hydrocarbon chain ~~comprising~~ consisting of one or more independently chosen heteroatoms, an about C2 to about C5 saturated or unsaturated, straight or branched, aliphatic hydrocarbon chain ~~comprising~~ consisting of at least one independently chosen possible member selected from a carbocyclic ring having about 4 to about 7 ring members, a heterocyclic ring having about 4 to about 7 ring members, an aromatic ring having about 5 to about 7 ring members, a heteroaromatic ring having about 5 to about 7 ring members; or any above member ~~comprising~~ consisting of a substituent group on at least one available ring atom, or any above about C2 to about C5 hydrocarbon chain having at least one independently chosen substituent group;

R<sup>3</sup> ~~comprises~~ is any possible member selected from a carbocyclic ring having about 3 to about 9 ring members, a heterocyclic ring having about 4 to about 9 ring members, an aromatic ring having about 5 to about 9 ring members, a heteroaromatic ring having about 5 to about 9 ring members; any above group ~~comprising~~ consisting of a substituent group on at least one available ring atom, an about C2 to about C5 saturated or unsaturated, straight or branched, aliphatic hydrocarbon chain, an about C2 to about C5 saturated or unsaturated, straight or branched, aliphatic hydrocarbon chain ~~comprising~~ consisting of one or more independently chosen heteroatoms, an about C2 to about C5 saturated or unsaturated, straight or branched, aliphatic hydrocarbon chain ~~comprising~~ consisting of at least one independently chosen possible member selected from a carbocyclic ring having about 4 to about 7 ring members, a heterocyclic ring having about 4 to about 7 ring members, an aromatic ring having about 5 to about 7 ring members, a heteroaromatic ring having about 5 to about 7 ring members; or any above member ~~comprising~~ consisting of a substituent group on at least one available ring atom, or any above about C2 to about C5 hydrocarbon chain having at least one independently chosen substituent group;

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$R^4$  ~~comprises~~ is any group independently selected from  $R^1$  or  $R^2$ ; and

Q ~~comprises~~ is an ammonium group, wherein said ammonium group can be substituted one or more times with a C1 to C6 alkyl radical, or ~~comprises~~ is a C3 to C7 heterocycle containing a nitrogen heteroatom which is bonded to the  $R^3$  group, wherein said heterocycle can contain one or more heteroatoms independently selected from nitrogen, oxygen, sulfur and combinations thereof, and wherein said heterocycle can be substituted with one or more substituent groups, a heterobicyclic ring containing a nitrogen heteroatom which is bonded to the  $R^3$  group, wherein said heterobicyclic ring can contain one or more heteroatoms independently selected from nitrogen, oxygen, sulfur and combinations thereof, and wherein said heterobicyclic ring can be substituted with one or more substituent groups, a heterotricyclic ring containing a nitrogen heteroatom which is bonded to the  $R^3$  group, wherein said heterotricyclic ring can contain one or more heteroatoms independently selected from nitrogen, oxygen, sulfur and combinations thereof, and wherein said heterotricyclic ring can be substituted with one or more substituent groups. Advantageously the substituent groups are independently selected from hydroxyl, halogen, alkyl, cycloalkyl, aryl, alkoxy, alkoxycarbonyl, alkylthio or amino.

2. (Currently amended) The compound of claim 1, wherein A ~~comprises~~ is  $YR^1$ ,  $R^1YOR^2$  or  $R^1OYOR^2$ .

3. (Currently amended) The compound of claim 1, wherein the W ~~comprises~~ is a C4 to C7 non-aromatic heterocycle containing a nitrogen heteroatom wherein said heterocycle ~~comprising~~ consisting of at least one heteroatom independently selected from nitrogen, oxygen, sulfur and combinations thereof, and wherein said heterocycle can be substituted with one or more substituent groups independently selected from hydroxyl, halogen, alkyl, cycloalkyl, aryl, alkoxy, alkoxycarbonyl, alkylthio or amino.

4. (Currently amended) The compound of claim 1, wherein X ~~comprises~~ is an oxygen atom.

5. (Currently amended) The compound of claim 1, wherein R<sup>1</sup> ~~comprises~~ is an about C3 to about C20 saturated or unsaturated, straight or branched, aliphatic hydrocarbon chain ~~comprising~~ consisting of a substituent group on at least one available ring atom, wherein the substituent groups are independently selected from hydroxyl, halogen, alkyl, cycloalkyl, aryl, alkoxy, alkoxycarbonyl, alkylthio or amino, or an about C3 to about C20 unsaturated straight or branched, aliphatic hydrocarbon chain with not more than 4 double bonds, comprising a substituent group on at least one available ring atom, wherein the substituent groups are independently selected from hydroxyl, halogen, alkyl, cycloalkyl, aryl, alkoxy, alkoxycarbonyl, alkylthio or amino.

6. (Currently amended) The compound of claim 1, wherein R<sup>2</sup> ~~comprises~~ is a C2 saturated or unsaturated alkyl or alkenyl, a C2 saturated or unsaturated alkyl or alkenyl which can be substituted with one or more substituents selected from hydroxyl, halogen, alkyl, cycloalkyl, aryl, alkoxy, alkoxycarbonyl, alkylthio and amino.

7. (Currently amended) The compound of claim 1, wherein R<sup>3</sup> ~~comprises~~ is a C2 saturated or unsaturated alkyl or alkenyl, a C2 saturated or unsaturated alkyl or alkenyl which can be substituted with one or more substituents selected from hydroxyl, halogen, alkyl, cycloalkyl, aryl, arylalkyl, alkoxy, alkoxycarbonyl, alkylthio and amino or a C3 to C8 cycloalkyl which is bonded at C1 to the oxygen and at C2 to Q.
8. (Currently amended) The compound of claim 1, wherein Q ~~comprises~~ is a C3 to C7 heterocycle containing a nitrogen heteroatom which is bonded to the R<sup>3</sup> group, wherein said heterocycle can contain one or more heteroatoms independently selected from nitrogen, oxygen, sulfur and combinations thereof, and wherein said heterocycle can be substituted with one or more substituent groups, independently selected from hydroxyl, halogen, alkyl, cycloalkyl, aryl, alkoxy, alkoxycarbonyl, alkylthio or amino.
9. (Currently amended) The compound of claim 1, wherein R<sup>1</sup> ~~comprise~~ is a C5 to C18 alkylidene group or C5 to C18 alkyl group.
10. (Currently amended) The compound of claim 1, wherein R<sup>1</sup> ~~comprises~~ is pentylidene, undecylidene, dodecylidene, tetradecylidene, hexadecylidene, pentyl, undecyl, dodecyl, tetradecyl or hexadecyl groups.
11. (Currently amended) The compound of claim 1, wherein Y ~~comprises~~ is a C3 to C6 carbocyclic ring, a substituted carbocyclic ring, a bridged tricyclic ring system, or a substituted bridged tricyclic ring system ~~or an aromatic ring~~.
12. (Currently amended) The compound of claim 1, wherein Y ~~comprises~~ is cyclohexyl, or adamantyl ~~or phenyl~~.

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13. (Currently amended) The compound of claim 1, wherein R<sup>2</sup> ~~comprises is~~ a C2 saturated alkyl.

14. (Currently amended) The compound of claim 1, wherein Q ~~comprises is~~ trimethylammonium, N-methylmorpholinio or N-methylpiperidinio.

15. (Currently amended) The compound of claim 1, wherein:

A ~~comprises is~~ R<sup>1</sup>YOR<sup>2</sup>;

W ~~comprises is~~ R<sup>3</sup>Q;

X ~~comprises is~~ oxygen;

Y residue ~~comprises is~~ a carbocyclic ring, a substituted carbocyclic ring, a bridged tricyclic ring system, or a substituted bridged tricyclic ring system;

R<sup>1</sup> ~~comprises is~~ a C12 to C18 alkylidene group or C12 to C18 alkyl group;

R<sup>2</sup> ~~comprises is~~ a C2 saturated alkyl;

R<sup>3</sup> ~~comprises is~~ a C2 saturated alkyl; and

Q ~~comprises is~~ an ammonium group, wherein said ammonium group can be substituted one or more times with a C1 to C6 alkyl radical, or ~~comprises is~~ a C3 to C7 heterocycle containing a nitrogen heteroatom which is bonded to the R<sup>3</sup> group, wherein said heterocycle can contain one or more heteroatoms selected from nitrogen, oxygen or sulfur, and wherein said heterocycle can be substituted with one or more independently chosen substituents.

16. (Currently amended) The compound of claim 1, which ~~comprises is~~ at least one of 1-{2-[[{(4-Dodecylidenecyclohexyloxy)ethyloxy]

hydroxyphosphinyloxy)ethyl]}-N,N,N-trimethylammonium inner salt; 1-{2-[[{(4-Dodecylidenecyclohexyloxy)ethyloxy]hydroxyphosphinyloxy)ethyl]}-1-methylpiperidinium inner salt; 1-{2-[[{(4-Dodecylidenecyclohexyloxy)ethyloxy]hydroxyphosphinyloxy)ethyl]}-1-methylmorpholinium inner salt; 1-{2-[[{(4-

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Tetradecylidenecyclohexyloxy)ethyloxy]hydroxyphosphinyloxy)ethyl)-*N,N,N*-trimethylammonium inner salt; 1-{2-[[{4-Tetradecylidenecyclohexyloxy)ethyloxy]hydroxyphosphinyloxy)ethyl]-1-ethylpiperidinium inner salt; 1-{2-[[{4-Tetradecylidenecyclohexyloxy)ethyloxy]hydroxyphosphinyloxy)ethyl)-1-methylmorpholinium inner salt; 1-{2-[[{4-Hexadecylidenecyclohexyloxy)ethyloxy]hydroxyphosphinyloxy)ethyl)-*N,N,N*-trimethylammonium inner salt; 1-{2-[[{4-Hexadecylidenecyclohexyloxy)ethyloxy]hydroxyphosphinyloxy)ethyl)-1-methylpiperidinium inner salt; 1-{2-[[{4-Hexadecylidenecyclohexyloxy)ethyloxy]hydroxyphosphinyloxy)ethyl)-1-methylmorpholinium inner salt; 1-{2-[[{4-Dodecylcyclohexyloxy)ethyloxy]hydroxyphosphinyloxy)ethyl)-*N,N,N*-trimethylammonium inner salt; or 1-{2-[[{4-Tetradecylcyclohexyloxy)ethyloxy]hydroxyphosphinyloxy)ethyl)-*N,N,N*-trimethylammonium inner salt.

17. (Currently amended) The compound of claim 1 wherein

A ~~comprises is~~ YR<sup>1</sup>;

W ~~comprises is~~ R<sup>3</sup>Q;

X ~~comprises is~~ oxygen;

Y residue ~~comprises is~~ a carbocyclic ring, a substituted carbocyclic ring, a bridged tricyclic ring system, a substituted bridged tricyclic ring system or an aromatic system;

R<sup>1</sup> ~~comprises is~~ a C5 to C18 alkylidene group or C5 to C18 alkyl group;

R<sup>3</sup> ~~comprises is~~ a C2 saturated alkyl; and

Q ~~comprises is~~ an ammonium group, wherein said ammonium group can be independently substituted one or more times with a C1 to C6 alkyl radical, or ~~comprises is~~ a C3 to C7 heterocycle containing a nitrogen heteroatom which is



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bonded to the R<sup>3</sup> group, wherein said heterocycle can contain one or more heteroatoms independently selected from nitrogen, oxygen or sulfur, and wherein said heterocycle can be substituted with one or more independently chosen substituents.

18. (Currently amended) A compound of claim 16, which ~~comprises~~ consists of, 1-{2-[(5-Cyclohexylidenepentyloxy)hydroxyphosphinyloxy] ethyl}-N,N,N-trimethylammonium inner salt; 1-{2-[(5-Cyclohexylidenepentyloxy)hydroxyphosphinyloxy] ethyl}-1-methylpiperidinium inner salt; 1-{2-[(5-Cyclohexylidenepentyloxy)hydroxyphosphinyloxy] ethyl}-1-methylmorpholinium inner salt; 1-{2-[(11-Cyclohexylideneundecyloxy)hydroxyphosphinyloxy]ethyl}-N,N,N-trimethylammonium inner salt; 1-{2-[(11-Cyclohexylideneundecyloxy)hydroxyphosphinyloxy] ethyl}-1-methylpiperidinium inner salt; 1-{2-[(11-Cyclohexylideneundecyloxy)hydroxyphosphinyloxy]ethyl}-1-methylmorpholinium inner salt; 1-{2-[(5-Adamantylidenepentyloxy)hydroxyphosphinyloxy]ethyl}-N,N,N-trimethylammonium inner salt; 1-{2-[(5-Adamantylidenepentyloxy)hydroxyphosphinyloxy]ethyl}-1-methylpiperidinium inner salt; 1-{2-[(5-Adamantylidenepentyloxy)hydroxyphosphinyloxy]ethyl}-1-methylmorpholinium inner salt; 1-{2-[(11-Adamantylideneundecyloxy)hydroxyphosphinyloxy]ethyl}-N,N,N-trimethylammonium inner salt; 1-{2-[(11-Adamantylideneundecyloxy)hydroxyphosphinyloxy]ethyl}-1-methylpiperidinium inner salt; 1-{2-[(11-Adamantylideneundecyloxy)hydroxyphosphinyloxy]ethyl}-1-methylmorpholinium inner salt; 1-{2-[(11-Cyclohexylundecyloxy)hydroxyphosphinyloxy] ethyl}-N,N,N-trimethylammonium inner salt; 1-{2-[(5-Adamantylpentoyloxy)hydroxyphosphinyloxy] ethyl}-N,N,N-trimethylammonium inner salt; or 1-{2-[(11-

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Adamantylundecyloxy]hydroxyphosphinyloxy] ethyl)-*N,N,N*-trimethylammonium inner salt.

19. (Currently amended) The compound of claim 1 wherein:

A ~~comprises~~ is R<sup>1</sup>OYOR<sup>2</sup>;

W ~~comprises~~ is R<sup>3</sup>Q;

X ~~comprises~~ is oxygen;

Y residue ~~comprises~~ is a carbocyclic ring, a substituted carbocyclic ring, a bridged tricyclic ring system, a substituted bridged tricyclic ring system or an aromatic system;

R<sup>1</sup> ~~comprises~~ is a C12 to C18 alkyl group;

R<sup>2</sup> ~~comprises~~ is a C2 saturated alkyl;

R<sup>3</sup> ~~comprises~~ is a C2 saturated alkyl; and

Q ~~comprises~~ is an ammonium group, wherein said ammonium group can be independently substituted one or more times with a C1 to C6 alkyl radical, or ~~comprises~~ is a C3 to C7 heterocycle containing a nitrogen heteroatom which is bonded to the R<sup>3</sup> group, wherein said heterocycle can contain one or more heteroatoms independently selected from nitrogen, oxygen or sulfur, and wherein said heterocycle can be substituted with one or more independently chosen substituents.

20. (Currently amended) The compound of claim 18 which ~~comprises~~ is 1-{2-  
{[(4-(Dodecyloxy)cyclohexyloxy)ethyloxy]hydroxyphosphinyloxy]ethyl}-1-  
methylpiperidinium inner salt, 1-{2-  
{[(4-(Dodecyloxy)cyclohexyloxy)ethyloxy]hydroxyphosphinyloxy]ethyl}-1-  
methylmorpholinium inner salt, 1-{2-  
{[(4-(Tetradecyloxy)cyclohexyloxy)ethyloxy]hydroxyphosphinyloxy]ethyl}-1-  
methylpiperidinium inner salt, or 1-{2-  
{[(4-

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(Tetradecyloxy)cyclohexyloxy)ethyloxy]hydroxyphosphinyloxy)ethyl}-1-methylmorpholinium inner salt.

21. (Currently amended) A pharmaceutical composition ~~comprising~~ consisting of a compound of claim 1 and a pharmaceutically acceptable carrier.

22. (Currently amended) A method of treating ~~protozoal-diseases~~ leishmaniasis, trypanosomiasis, malaria, toxoplasmosis, babesiosis, amoebic dysentery and lamblasis in an individual or animal in need of treatment, comprising administering an effective amount of a compound of claim 1.

23. (cancelled)